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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,893	12/29/2000	Robert Palifka	09991-014001	6685

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EXAMINER	
NGHIEM, MICHAEL P	
ART UNIT	**PAPER NUMBER**
2863	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/749,893	PALIFKA ET AL.
	Examiner	Art Unit
	Michael P. Nghiem	2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-33,35-45,48,50-52,54-58,60,61,63-100 and 102-106* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-33,35-45,48,50-52,54-58,60,61,63-100 and 102-106* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed on September 9, 2005 has been acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 40-42, 45, 48, 50-52, 54-58, 60, 63-65, 79-81, 85-99, 102, 104, and 105 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Heat bonding a thermosplastic filter to a surface of a piezoelectric element is not described in the specification to enable one skilled in the art to which it pertains, to make the invention. It appears that heating a thermoplastic filter to heat bond it to a surface would distort the shape and size of the holes.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 44, 66-72, 76-78, and 100 are rejected under 35 U.S.C. 102(e) as being anticipated by Shigemura (US 6,361,151).

Regarding claims 44 and 100, Shigemura discloses a method and apparatus of manufacturing an ink jet printing module (ink jet recording head, Abstract, line 1) comprising:

- contacting a first component (11) of an ink jet printing module having a surface (surface of 7) with a thermoplastic bonding component (thermoplastic adhesive, column 7, lines 14-16);

- heating the surface to bond the surface to the thermoplastic bonding component (thermoplastic adhesive between 11, Fig. 13, and 7, Fig. 14) wherein the first component of an ink jet printing module includes lead zirconium titanate (pzt, column 6, lines 4-6) and the thermoplastic bonding component includes a plurality of openings (the thermoplastic layer between 11 and 8 has holes to match the ink channels of 11, Fig. 13 and nozzles of 7, Fig. 14).

Regarding claim 66, Shigemura discloses applying pressure to the surface and the thermoplastic bonding component (pressure applied by the surfaces of 7 and 11 on the thermoplastic adhesive).

Regarding claim 67, Shigemura discloses that pressure is applied during heating component (pressure applied by the surfaces of 7 and 11 on the thermoplastic adhesive during heating).

Regarding claim 68, Shigemura discloses that the surface and the thermoplastic bonding component are substantially free of liquid adhesive (thermoplastic hardens during cooling).

Regarding claims 69 and 100, Shigemura further discloses contacting a second component (7) of the ink jet printing module having a surface (surface of 7) with the thermoplastic bonding component (Figs. 14, 16); and heating the surface to bond the surface to the thermoplastic bonding component (column 7, lines 14-16).

Regarding claim 70, Shigemura discloses that the first component of the ink jet printing module is a piezoelectric element (piezoelectric element 11).

Regarding claim 71, Shigemura discloses that the thermoplastic bonding component includes an electrode pattern (electrode pattern formed on ink channels extend toward the thermoplastic adhesive between nozzle plate and piezoelectric element, Fig. 7).

Regarding claim 72, Shigemura discloses that the piezoelectric element is lead zirconium titanate (pzt, column 6, lines 4-6).

Regarding claim 76, Shigemura discloses that the thermoplastic bonding component includes an adhesive polyimide (column 7, line 14).

Regarding claim 77, Shigemura discloses that the ink jet printing module includes an ink channel (Fig. 7), a piezoelectric element being positioned to subject ink within the channel to jetting pressure (Figs. 5, 6), and electrical contacts (electrodes) arranged for activation of the piezoelectric element (column 2, lines 47-50).

Regarding claim 78, Shigemura discloses that the ink jet printing module includes a series of channels (Fig. 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 29-33, 36-39, 73-75, 103, and 106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. (US 6,755,511).

Shigemura discloses all the claimed limitations as discussed above except:

- regarding claims 29 and 74, and the thermoplastic bonding component has a thickness between 10 micron and 125 microns.
- regarding claims 33 and 73, and the thermoplastic bonding component has a thickness between 1 micron and 150 microns.
- regarding claims 75, 103, and 106, and the thermoplastic bonding component has a thickness between 20 micron and 50 microns.

Nevertheless, Moynihan et al. discloses that the thermoplastic bonding component has a thickness between 10 micron and 125 microns and between 1 and 150 microns (15 microns, column 5, lines 64-67) for the purpose of effectively bonding a piezoelectric element (column 3, lines 2-3).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura with the thickness of the thermoplastic bonding component as disclosed by Moynihan et al. for the purpose of effectively bonding a piezoelectric element.

Further, even though Shigemura does not disclose that the thermoplastic bonding component has a thickness of between 20 micron and 50 microns, it is obvious to modify the range of thickness of the thermoplastic bonding component in order to obtain an optimum effective bonding. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

Claims 82-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of DeYoung et al. (US 4,751,774).

Shigemura discloses all the claimed limitations as discussed above except:
- regarding claim 82, adhering a protector strip over the orifice plate.
- regarding claims 83 and 84, a thermoplastic bonding material adjacent to the protector strip or the orifice plate.

Nevertheless, DeYoung et al. discloses adhering a protector strip (44) over the orifice plate (42) for the purpose of protecting the orifices (Fig. 6). It would be obvious to use a thermoplastic adhesive for the purpose of effectively bonding the protector strip to the orifice plate.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura with adhering a protector strip over the orifice plate as disclosed by DeYoung et al. and using a thermoplastic adhesive for the purposes of protecting the orifices and effectively bonding the protector strip to the orifice plate.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. as applied to claim 29 above, and further in view of the following.

Shigemura **as modified** by Moynihan et al. discloses all the claimed limitations as discussed above except the thermoplastic bonding component has a thickness between 20 micron and 50 microns.

Nevertheless, even though Shigemura as modified does not disclose that the thermoplastic bonding component has a thickness of between 20 micron and 50 microns, it is obvious to modify the range of thickness of the thermoplastic bonding

component in order to obtain an optimum effective bonding. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. as applied to claim 29 above, and further in view of DeYoung et al..

Shigemura **as modified** by Moynihan et al. discloses all the claimed limitations as discussed above except a protector strip adhered to the orifice plate.

Nevertheless, DeYoung et al. discloses a protector strip (44) adhered to the orifice plate (42) for the purpose of protecting the orifices (Fig. 6).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura as modified with adhering a protector strip to the orifice plate as disclosed by DeYoung et al. for the purpose of protecting the orifices.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-H.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

November 20, 2005